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ABSTRACT

Each year, the Washington State Board for Community and Technical Colleges (SBCTC) compiles data on educational and job related outcomes for students leaving vocational preparation programs determined to have been preparing for employment. The automated data matching procedure examines state unemployment insurance and benefits records, public post-secondary enrollments, U.S. Armed Forces enlistments, and state community college enrollments. Data is compiled on employment status, estimated annual wages, hours worked per week, the relation of employment to training, location of employer, number of people employed by employer, and post-secondary or military status. An analysis of 9-month outcomes for the 12,269 graduates of vocational programs in 1990-91 revealed an overall job placement rate of 85%, with 27% of the graduates going into health related fields, 23% going into trades, 13% entering the service industry, and 12% in administrative support. With respect to the relation of jobs to graduates' training, the highest were sales at 92%, managerial at 90%, and health related graduates at 89%, although health related was thought to actually be higher than both the sales and managerial programs. Finally, the highest salaries were earned by health related graduates, with a mean hourly salary of $13.62 and median hourly salary of $13.07; managerial graduates, with a mean of $10.45 per hour and a median of $8.76 per hour; and other professional/technical graduates, with a mean of $10.41 per hour and a median of $10.05 per hour. (Definitions of the occupational categories are appended.) (KP)

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No. 93-5

Washington State Board for Community and Technical Colleges; Division of Enrollment Planning and Information Services

USING ADMINISTRATIVE DATA MATCHES FOR FOLLOW-UP WASHINGTON COMMUNITY AND TECHNICAL COLLEGES

October 1993

Introduction

One method of assuring the community and technical colleges are meeting the high goals expected of them from the citizens who fund the system is to assess student outcomes. The results of the assessment provide data for continuous improvement and allow the State Board for Community and Technical Colleges (SBCTC) to respond to external accountability mandates. To measure the outcomes of job training programs, Washington community and technical colleges use administrative data matches to provide follow-up information on those who graduate from or leave vocational training programs. The administrative data matches provide higher quality data on placement and salary than previously available via student survey. The data matches do not, however, provide data regarding student evaluations of their programs. Consequently some colleges elect to supplement the administrative data match with student focus groups or student surveys.

Who is Tracked?

SBCTC gathers data and reports findings related to the educational and job related outcomes of former students who were preparing for jobs. Operationally this has been defined as students who:

1. Graduated with a vocational major in the year of study (Program CIP in the Transcript File is an approved vocational program and Exit Code = 1-4)
2. Had not graduated but left the college and had not returned for a year and had job preparatory intent (Student Intent = F) and had completed 10 or more vocational credits or 200 or more vocational hours before leaving. (These students include both those with "marketable skills" or "early leaver" - called "course completers.")
3. Had not graduated but left the college and had not returned for a year and had job preparatory intent (Student Intent = F) and had completed less than 10 vocational credits or less than 200 vocational hours before leaving. (Tracked for educational outcomes only, not for job placement).

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Students who graduate or leave during a academic year are gathered into a single file and regarded as the Exiting Class for that year.

The group has been further limited to those with valid social security numbers. About two percent of the initial file were students with invalid numbers indicating that they were international students, enrolled in the correctional facilities program or preferred not to use their social security number for registration purposes.

Starting with the class of 1991-92, SBCTC added apprenticeship completers to the follow-up process. On an experimental basis, SBCTC also added follow-up of all other graduates and students leaving the college. SBCTC will assess the usefulness of follow-up data for four populations - job upgrading students, basic skills students, students enrolled for transfer purposes and all other students. SBCTC has the capacity to add other groups to the follow-up process as needed.

Matching Process

Each year SBCTC compiles files based on an automated data matching procedure which provides the former student's employment status approximately nine months after the student leaves the institution. Each year an exiting class of about 18,000 job preparatory students is matched against the following files:

Unemployment Insurance (UI) Wage Records (ESD) (Washington and four nearby states)
Unemployment Insurance Benefits History (ESD)
Post-Secondary Enrollments (OFM) (generally limited to public institutions)
U.S. Armed Forces
SBCTC Student Management Information System (SMIS) (for enrollment at another community or technical college)

These matches provide the information shown in Table 1.

The Washington Employment Security Department (ESD) performs the UI and military matches under contract with SBCTC. The ESD staff provided the expertise required to program the matching protocol.

Table 1
Information from Follow-Up Match

Employment status
Whether receiving unemployment benefits
Estimated annual wage (adjusted to a 40 hour week for comparability)
Hours actually worked per week
Whether employment is related to training
Industry type based on Standard Industrial Code (3 digit level SIC) of employer
Location of employer
Number of people employed by employer
Post-secondary or military status if not employed

Technical Issues Related to the Match

About 16 percent of the exiting class has two or more employers during the match quarter. The UI database does not identify whether that employment was simultaneous or sequential. The follow-up file allows only one SIC and location per student, thus a protocol was developed to select a single firm, the "principle employer." The annual wage was calculated only for work for the principle employer.

The principle employer was determined from the wage data. For those with more than one employer, the employer with the highest calculated hourly wage was selected, provided that more than 100 hours of employment were reported. If no employer reported more than 100 hours or hours employed were missing for any employer, the employer with the highest wage was selected as the principle employer.

The computer protocol calculated quarterly hours by summing hours worked for all employers, provided that all employers reported hours. Matches between SIC and CIP were for all SIC codes rather than just for the principle employer.

Timeline for Matching

Since UI data are quarterly in nature the actual match period is a three month period, with wage data averaged for the three months. SBCTC has chosen the January, February, March period for the match for two years:

- Exiting students would generally have had enough time to have passed their probationary period, but not long enough to have non training related experience influence their employment status.
- Salaries are likely more reflective of actual earnings than in the prior three months which may include year end bonuses.

The data matches take place a little more than a year after most students leave the college and results are available about 16 to 17 months after most students leave. Because this is an annual rather than a quarterly process all students exiting anytime in a given year are matched at the same time and against the same quarterly UI data. For cost reasons no attempt is made to match each student exactly nine months after they left, but rather to match the entire cohort nine months after most of them left the college.

UI data for January to March are not available until mid July because employers have a three month grace period for reporting. The matching process including mailing of tapes to other states takes a minimum of two months and has in some years taken up to four months.

Table II shows the timeline for the exiting class of 1993-94 as illustration.

Table II
Timeline for Data Match

Early July	SBCTC creates exiting class file
July	ES matches against Washington UI files
August	ES sends tapes to other states, military
Early Sept	ES combines input from other states
Sept	SBCTC matches other college files
Early Oct	Data available for analysis

Estimating the Non-Matched

The match process results in data for about 75 percent of the exiting class. In 1991, SBCTC conducted a survey of a random sample of unmatched students to determine their status nine months after leaving the college. The following outcomes were found for all graduates and course completers who did not match:

- Self-employed, employed in the underground economy, employed in regular UI wage job but with inaccurate social security number in one system or the other, employed by the federal government, employed in states other than those matches (53 percent were employed)
- Full-time homemakers (18 percent)
- Unemployed and seeking work, but not receiving benefits (8 percent)
- Continuing their education in college other than the matched colleges or with different social security numbers (7 percent)
- Disabled, not seeking work (7 percent)
- Discouraged, not seeking work (6 percent)
- Retired (1 percent)
- A small number were deceased

Results of that survey are used each year to estimate the outcomes of the unmatched students.

Graduates by Occupational Area

The State Board for Community and Technical Colleges categorizes graduates of vocational programs by the eight major occupational categories used in job forecasting. These occupational categories are based on the CIP code of the program graduate at the time of graduation. Data from 1990-91 graduates show that half of all graduates majored in health related or trades occupations.

Table III
Number of 1990-91 Graduates of Vocational Programs
Washington Community and Technical Colleges

Occupational Category	Graduates	% of Total Graduates
Health Related	3,273	27%
Trades	2,772	23%
Other Professional/Technical	1,800	15%
Services	1,647	13%
Administrative Support	1,429	12%
Sales	673	5%
Managerial	363	3%
Ag/Forestry	297	2%
Other	15	0%
	12,269	100%

Job Placement and Positive Placement by Occupational Category

Overall job placement for the class of 1990-91 was 85 percent and positive placement was 91 percent. "Positive placement" includes students who continued their education or joined the military. Some of the smaller fields of study had lower job placement levels. System level positive placement rates were fairly similar for graduates in all fields.

Table IV
Placement of 1990-91 Graduates of Vocational Programs
Washington Community and Technical Colleges

Occupational Category	Job Placement	Positive Placement
Health Related	89%	90%
Other Professional/Technical	86%	88%
Administrative Support	84%	86%
Trades	83%	89%
Managerial	83%	87%
Services	83%	86%
Sales	82%	85%
Ag/Forestry	75%	84%
All Fields	85%	91%

Note: Placement was statistically derived from a combination of administrative match data and calculations for the unmatched graduates based on sample survey findings. Status is as of approximately nine months after leaving the college or graduation.

Quality Indicators

One measure of quality of job gained after training is whether the job was related to training. The Washington state UI wage files, like those in most states, does not contain occupational information. Employers are coded by a Standard Industrial Code (SIC) which is used to estimate the relatedness of training and employment. ESD staff have created a protocol which matches each CIP to each SIC. The match is based on the most current data on the occupational make-up for each industry as reported by the industry in Washington and a national protocol matching CIP to occupations. ESD staff update the protocol as needed to most accurately reflect the relatedness to training. Because most industries hire sales and managerial workers, the relatedness to training factor for those training programs are overstated compared to self-reported survey results. For the other major occupational categories the relatedness to training protocol matches closely to self-reported data.

Given that the relatedness factor is likely overstated for sales and managerial fields, the field with the highest related to training factor for 1990-91 graduates was health. Trades and agricultural/forestry graduates had the lowest likelihood of being in a job related to their training.

Relatedness to training is only one indicator of quality of training. Another readily available indicator is the salary obtained by those in jobs related to training. The table below provides both a mean hourly wage and the median. The median is substantially different from the mean when a small number of students earned unusually large hourly wages and thus skewed the mean in an upward direction. A small number of exceptionally low hourly wages (less than $1.50 per hour) were regarded as errors and deleted from analysis.

Table V
1990-91 Vocational Graduates in Training Related Jobs
Washington Community and Technical Colleges

		In Training Related Industries	
Occupational Category	Training Related Placement	Mean Hourly Salary	Median Hourly Salary
Sales*	92%	$8.14	$7.62
Managerial*	90%	$10.45	$8.76
Health Related	89%	$13.62	$13.07
Administrative Support	84%	$8.34	$8.04
Other Professional/Technical	78%	$10.41	$10.05
Services	73%	$8.56	$7.53
Trades	67%	$9.95	$8.94
Ag/Forestry	58%	$7.91	$7.23

* Related placement is overstated for sales and managerial occupations due to the methodology used. Status is as of approximately nine months after leaving the college or graduation. Salaries are in 1992 dollars and represent wages in January to March of that year.

Appendix A
MAJOR OCCUPATIONAL CATEGORIES

Occupational Information System Definitions	Examples of Community & Technical College Programs		Sample CIP Codes
Managerial: Includes managers, executives and administrators, not including first line supervisors who share work responsibilities with supervisers. Also includes management support occupations, such as accountants, auditors, management analysts and personnel specialists. Does not include administrative support, clerical and secretarial occupations.	Business Administration & Management	Small Business Agent	52.0201 52.0701
Other Professional & Technical: Includes engineers, architects, scientists, teachers, librarians, physicians, dentists, and paraprofessionals in these areas.	Accounting Tech Engineering Tech	Programmers Graphic Arts Communications Legal Related	10.0104 11.0301 15.0101 22.0103 48.0103
Sales: Includes salespersons, cashiers, counter and rental clerks and stock clerks.	Fashion Merchandising Retail Merchandising Sales Rep	Checker Trning Parts Merchandising Real Estate Marketing	08.0102 08.0706 52.1501
Services: Includes cleaning and building services, food preparation, waiters/waitresses, food counter workers, personal and childcare workers, corrections officers and human services paraprofessionals	Corrections Human Services Culinary Arts Teaching Asst	Child Care Cosmetology Hospitality Related	12.0403 12.0503 13.1501 20.0201 43.0102
Agricultural and Forestry: Includes forestry, logging and timber occupations, and agricultural related jobs in non-agriculture industries (e.g. gardeners and nursery workers).	Horticulture Ag Tech Ag Business Farriery Horticulture	Commercial Fishers Forestry Tech Nursery/ Greenhouse	01.0301 01.0601 03.0301
Administrative Support: Includes financial records processing occupations, information clerks, scheduling and dispatching occupations, secretaries, stenographers and typists.	Secretarial General Office	Wordprocessing Court Reporters	52.0401 52.0402
Trades: Includes construction workers, mechanics, electricians, precision metal workers, machine setters, printing press operators.	Welding Machinist Auto/Diesel Mechanics Water/Waste Water Tech	Inspectors-Testers Machine Tool Operator Construction Trades Equipment Repair	46.0101 47.0101 47.0604 48.0501
Health Related: Nursing, dental and other health areas.	Dental Assisting, Hygenist Medical Records Tech Occupational Therapy	Paramedic AA Degree Nurse Medical Illustrator	51.0601 51.1601